

February 16, 2006

Mr. Jim Grant  
C-T Decommissioning Project Manager  
Mallinckrodt Chemical, Inc.  
Mallinckrodt & Second Streets  
P.O. Box 5439  
St. Louis, MO 63147

SUBJECT: MEETING REPORT

Dear Mr. Grant:

On January 24, 2006, representatives of Mallinckrodt, Inc., (Mallinckrodt) and the staff of the U.S. Nuclear Regulatory Commission (NRC) held a follow-on to our October 5, 2005, meeting to discuss Mallinckrodt's responses to the NRC's request for additional information, dated June 29, 2005, on the Mallinckrodt Phase II Decommissioning Plan dose modeling approach. We have enclosed a copy of our meeting report.

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). This information is also available on NRC's website at:  
<http://www.nrc.gov/materials/decommissioning/public-involve.html>

If you have any questions or comments regarding the enclosed, please contact me at (301) 415-0023.

Sincerely,

**/RA/**

Amir Kouhestani, Acting Project Manager  
Materials Decommissioning Section  
Division of Waste Management  
and Environmental Protection  
Office of Nuclear Material Safety  
and Safeguards

Docket No.: 40-6563  
License No: STB-401

Enclosure:

1. Meeting Report
2. Meeting Attendees

cc: Mallinckrodt Service List

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C-T Decommissioning Project Manager  
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OFFICE	DWMEP:PM	DWMEP:LA	DWMEP:SC	DWMEP: SC	DWMEP: SC
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DATE	1/25/06	1/31/06	2/10/06	2/10/06	2/16/06

OFFICIAL RECORD COPY

## MEETING REPORT

DATE: January 24, 2006

TIME: 1:00 p.m. - 4:00 p.m.

PLACE: U.S. Nuclear Regulatory (NRC), Headquarters  
One White Flint North  
Room: O-04B4  
11555 Rockville Pike  
Rockville, MD 20852-2738

PURPOSE: Mallinckrodt proposes to perform Phase II of Decommissioning at its facility in Saint Louis, Missouri. Mallinckrodt incorporated NRC's October 5, 2005, meeting recommendations into its dose modeling responses to NRC's Request for Additional Information (RAI). Mallinckrodt reviewed its current RAI responses with NRC to obtain NRC's overall impression.

ATTENDEES: Refer to Attachment

BACKGROUND: The Mallinckrodt site has been in operation since 1867 and has produced a wide range of products. In addition to the extraction of columbium and tantalum carried out under NRC Nuclear Material License No. STB-401, various uranium compounds were extracted under contract to the Manhattan Engineering District and the Atomic Energy Commission (MED-AEC). Remediation of MED-AEC radiological constituents is currently being performed under the U.S. Department of Energy's Formerly Utilized Site Remediation Program (FUSRAP) by the United States Army Corps of Engineers (USACE). Decommissioning at the Mallinckrodt site will take place in two phases. Phase I addressed the decommissioning of the buildings and equipment to the extent that whatever remains on-site will be released for unrestricted use. Phase I was completed in December 2004. Phase II will complete the decommissioning of the building slabs and foundations, paved surfaces, and all subsurface materials. Staff is now evaluating the Phase II Decommissioning Plan (DP) for the Mallinckrodt site. Contaminants at the Mallinckrodt site are: U-238; Th-230, Ra-226, Th-232, Ra-228, and Th-228.

### DISCUSSION:

The meeting was a follow-on to the October 5, 2005, NRC-Mallinckrodt meeting to further clarify Mallinckrodt's responses to staff's earlier RAIs.

Staff enumerated to Mallinckrodt its October 5, 2005, key messages (see ADAMS Accession # ML053000212 for the meeting report).

Mallinckrodt noted that it is actively in contact with the USACE to discuss areas of

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contamination overlap and site clean-up responsibilities between the two organizations. The subsurface contamination clean-up boundaries will also be addressed as part of the Mallinckrodt-USACE discussions. As of the date of this meeting, Mallinckrodt and USACE have not come to an agreed upon resolution of contamination boundaries.

Mallinckrodt provided additional clarification in response to the open RAI #45 (Methodology used to calculate Derived Concentration Guideline Levels (DCGLs)) from the October 5, 2005 meeting. Mallinckrodt's consultant reviewed with the staff the details of the revised draft Probabilistic Derivation of Radiological Dose Factors and DCGL<sub>w</sub> Applicable to C-T Soil and Section 5, Dose Modeling. Mallinckrodt's consultant noted that it has generated a new Appendix C to the DP and has reworked the DP's Section 5: Dose Modeling. The new report includes a revised calculation of DCGLs and sensitivity analyses for the ratios of radionuclides present in the source term. Staff plans to evaluate Mallinckrodt's additional information once it's submitted as part of the Mallinckrodt RAI response.

Staff's evaluation of Mallinckrodt's pending submittal will also include an assessment of Mallinckrodt's supplemental information and its responsiveness relative to the staff's remaining questions about; RAI #41 (the thickness of the contaminated zone), RAI #43 (indoor gamma shielding factor), RAI #49 (area factor for elevated measurement). Additionally, staff and Mallinckrodt discussed the methodology Mallinckrodt applied in the calculation of DCGLs for pavement and how the potential dose from contaminated soil beneath the pavement will be accounted for (RAI #4, and RAI #48). All previous staff RAIs on dose modeling have been addressed by Mallinckrodt.

RAI #51 (identify all contaminated areas on-site, ...) and discussion of staff preparing an Environmental Assessment (EA) that includes non-radiological issues ensued. Staff noted preparation of a site-specific EA is a requirement before the Mallinckrodt license is amended to incorporate the Phase II DP into the license. Staff will seek to obtain a copy of the environmental reports that the USACE previously prepared as part of its FUSRAP activities at this site. Staff's progress on preparing an EA is on hold pending Mallinckrodt decision on its site-wide dose modeling strategy. Mallinckrodt will notify staff whether it will seek dose compliance demonstration in accordance with the License Termination Rule (LTR) for the entire site, including the residual dose from the FUSRAP remediated portions of the site, or whether it has arrived to a settled delineation of contaminated areas from the MED-AEC activities versus the NRC-licensed contaminated areas of the site. Mallinckrodt's decision will allow NRC EA-staff to evaluate the potential environmental impacts over an area that is consistent with Mallinckrodt's dose compliance strategy.

#### OPPORTUNITY FOR COMMENT:

Ms. Joanne Wade, a Project Manager from the Missouri Department of Natural Resources, observed via a teleconference and had no comments.

#### ACTIONS:

1. Mallinckrodt, by the end of January 2006, will inform staff of its progress in finalizing its strategy for demonstrating compliance with the NRC dose standard for unrestricted use under the LTR (i.e., the 10 CFR 20.1402 criteria). Mallinckrodt indicated that it may be able to make a decision on whether it will include the FUSRAP dose as part of its demonstration of compliance with 10 CFR 20 Subpart E and will reflect its decision in the DP. Mallinckrodt understands that its decision is important to the EA development

and completion of the safety evaluation.

2. Mallinckrodt and staff will continue to work on the resolution of RAI #51 taking into account its dose modeling strategy and boundary issues.
3. Staff will provide Mallinckrodt with generic types of information it may need in order to prepare an EA. Specific information cannot be requested at this time due to pending dose modeling strategy and boundary issues.
4. Mallinckrodt will provide additional clarifying details in the DP's new Appendix C, revised Section 5 (Dose Modeling), and Section 14 (Facility Radiation Surveys) about the implementation of the final status survey for both pavement and soil beneath the pavement based on respective and measurable DCGLs described in units of pCi/g.
5. Mallinckrodt to submit response documents to RAIs #41, #44, and #49.
6. Staff, upon Mallinckrodt's request, may schedule a teleconference to discuss resolution of the remaining RAIs.

ATTACHMENT: Meeting Attendees

Docket No.: 40-6563

License No.: STB-401

## Mallinckrodt Chemical Inc. Service List

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